

Protect Your Home and Property

# A Homeowner's Guide to Landslides

for Washington and Oregon

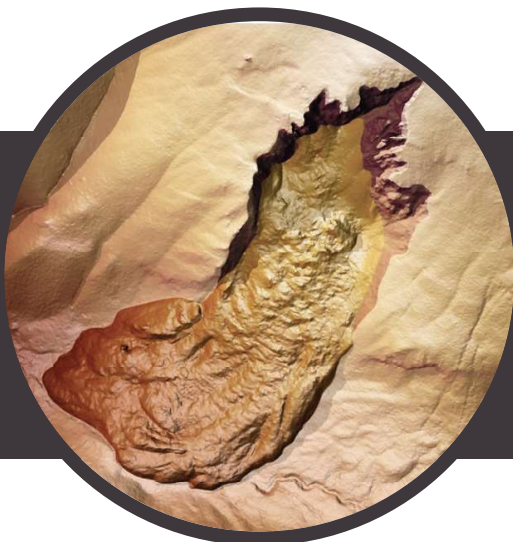


Washington Geological Survey  
and

Oregon Department of  
Geology and Mineral  
Industries



**LANDSLIDES ARE ONE  
OF THE MOST COMMON AND  
DEVASTATING NATURAL HAZARDS IN  
THE PACIFIC NORTHWEST. THE DAMAGE THEY  
CAUSE IS ALMOST NEVER COVERED BY INSURANCE.**



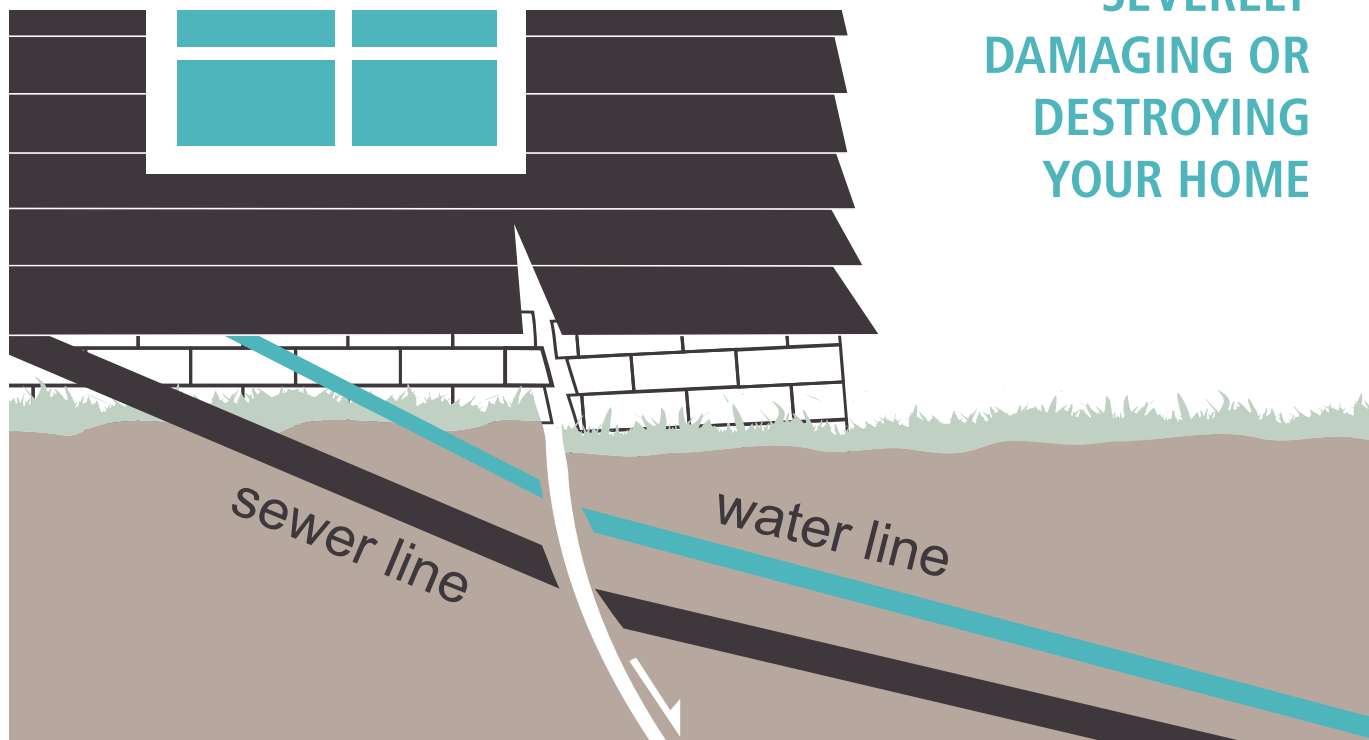
## WHAT IS A LANDSLIDE?

A landslide is the downward slope movement of rock, soil, or debris.

Debris flow, earth flow, rock fall, mudflow, mudslide, slide, and slump are also terms for landslide.

## WHY SHOULD I CARE?

**LANDSLIDES CAN TAKE HUMAN LIFE. HOWEVER, EVEN A FEW INCHES OF SLOPE MOVEMENT CAN DISRUPT SEPTIC, SEWER, AND WATER LINES AND CRACK FOUNDATIONS, SEVERELY DAMAGING OR DESTROYING YOUR HOME**



**READ ON TO LEARN SEVERAL THINGS YOU CAN DO TO REDUCE YOUR RISK**

## COMMON TYPES OF LANDSLIDES



**Rotational slides** occur when rock or earth is transported downslope along a curved surface. This type of landslide can be large and damaging.

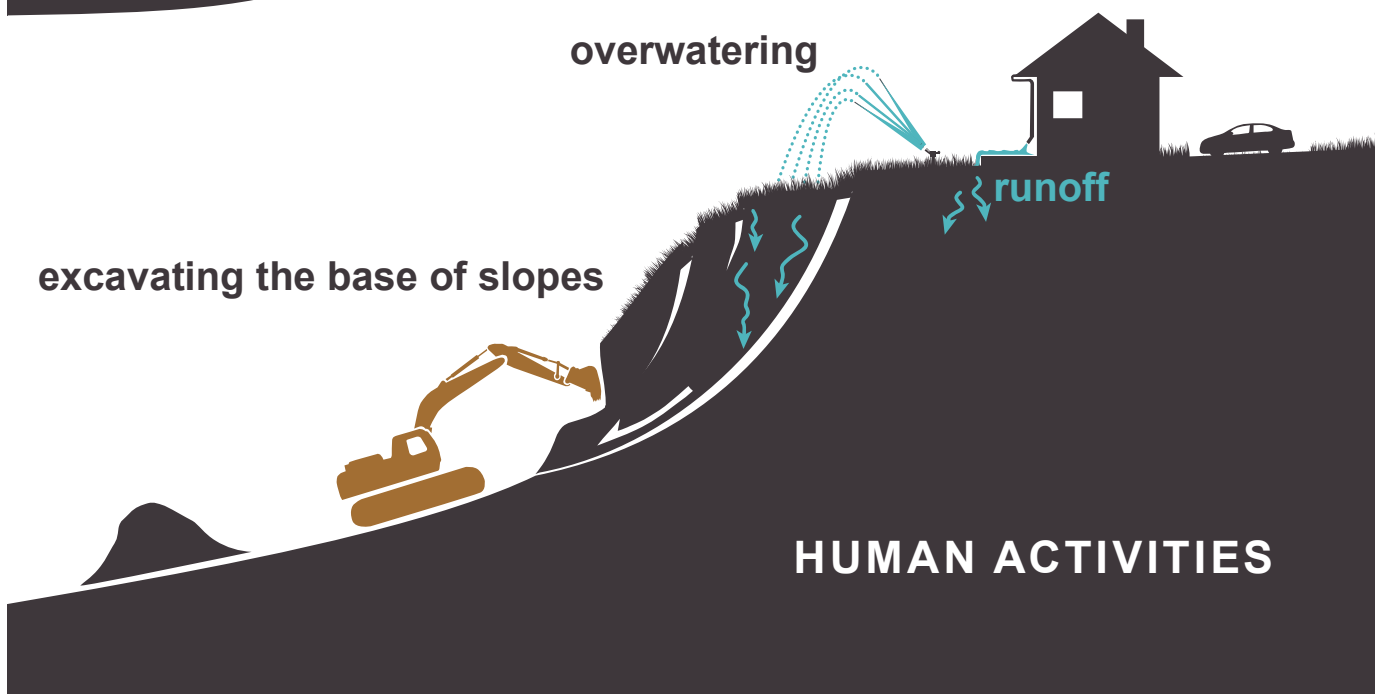
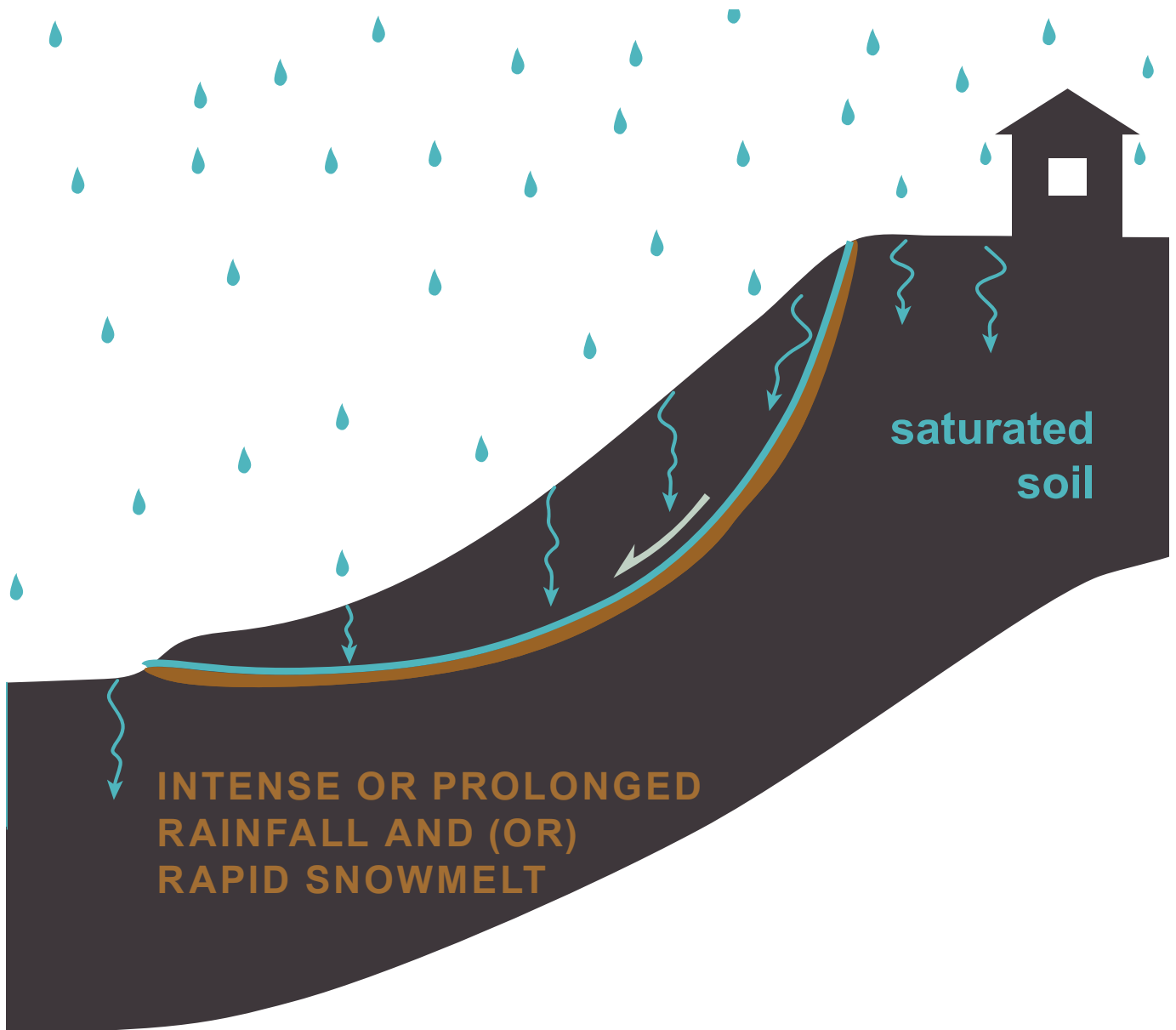


**Earthflows** and **debris flows** are usually rapid, downward movements of mixtures of water, soil, rock and (or) debris. Flows often occur in either water-saturated slopes or where vegetation has been removed by fire or humans.



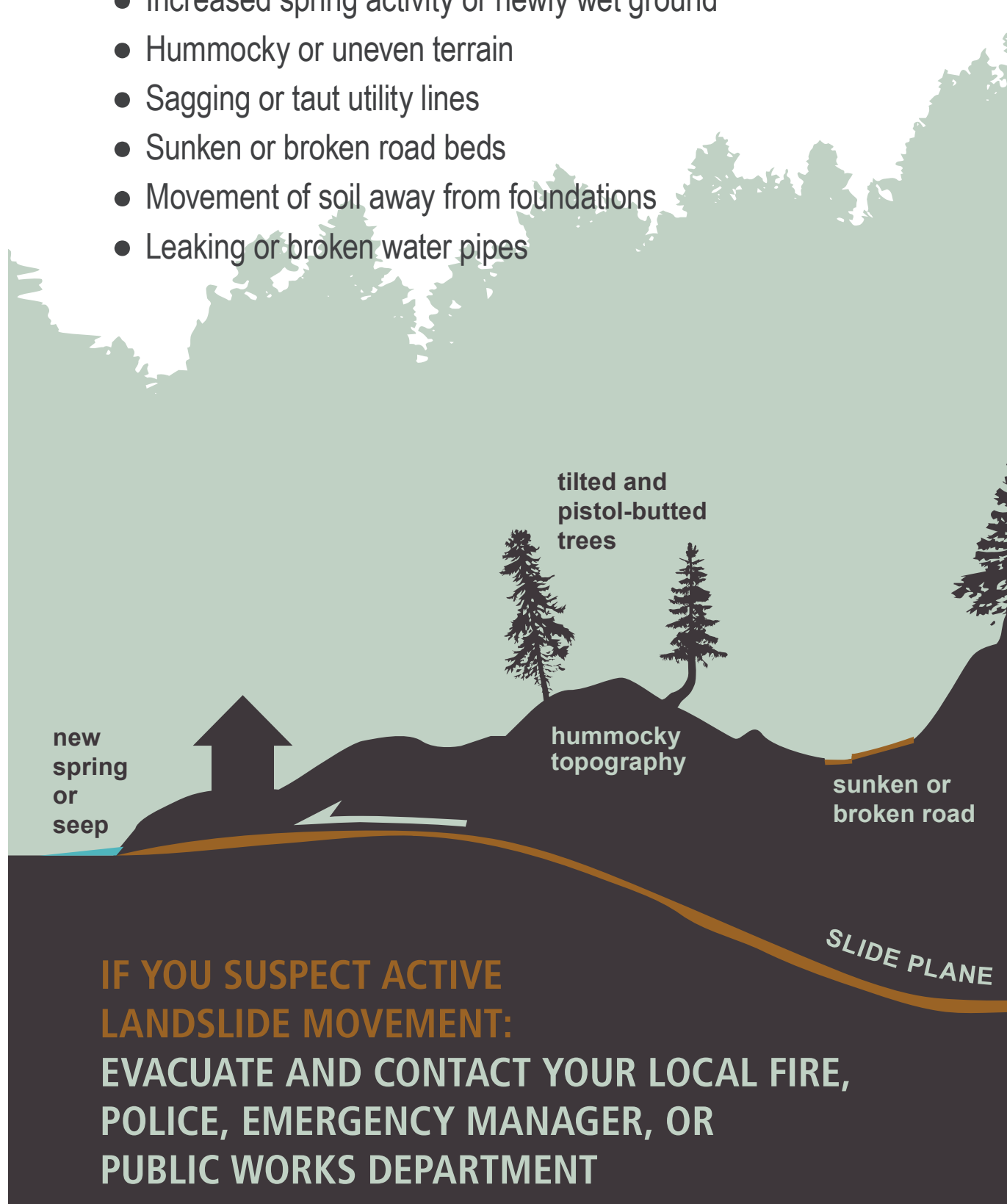
LANDSLIDES  
HAPPEN IN AREAS  
WITH STEEP SLOPES,  
AND ARE TYPICALLY  
TRIGGERED BY  
EVENTS LIKE THESE





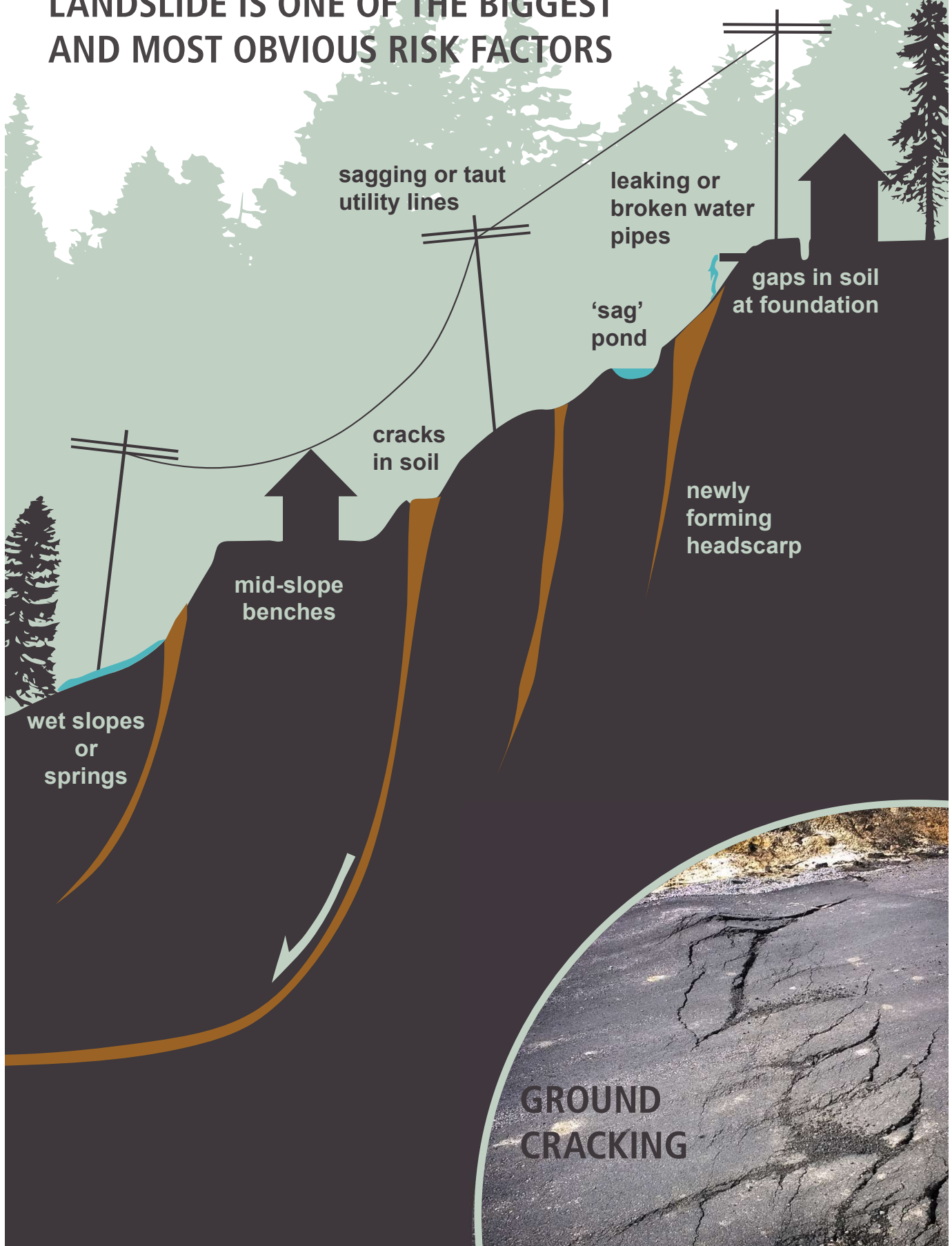
**SIGNS OF LANDSLIDE ACTIVITY:**

- Cracks in soil
- Tilted or bent trees
- Increased spring activity or newly wet ground
- Hummocky or uneven terrain
- Sagging or taut utility lines
- Sunken or broken road beds
- Movement of soil away from foundations
- Leaking or broken water pipes





## THE PRESENCE OF A PREVIOUS LANDSLIDE IS ONE OF THE BIGGEST AND MOST OBVIOUS RISK FACTORS

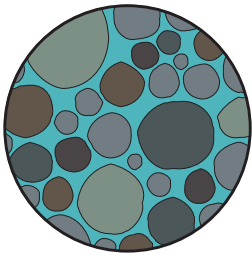




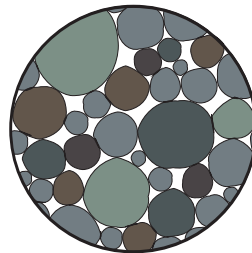
## WHY IS WATER IMPORTANT?

One cubic foot (7.5 gallons) of water weighs 62.3 lbs!

When water is added to a slope the weight increases the downward force, putting surrounding homes at risk



**Wet soil**  
grains pushed apart  
reducing soil strength



**Dry soil**  
grains touch,  
increasing soil strength

## REDUCE WATER ON SLOPES:

- Maintain healthy vegetation
- Use drought-resistant plantings
- Fix leaking plumbing immediately
- Direct downspout runoff well away from slopes
- Plant trees and shrubs, which uptake water more efficiently than lawns

native





## PLANT ROOTS ARE VITAL

Live tree roots strengthen slopes. After a tree is cut down, it takes between 5 and 8 years for the roots below to lose their strength.



**MAINTAIN A  
BUFFER OF NATIVE  
PLANTS BETWEEN  
YOUR HOUSE  
AND THE EDGES  
OF STEEP SLOPES**

trees and plants



**THERE ARE ACTIONS YOU CAN TAKE AS A HOMEOWNER TO REDUCE THE CHANCES OF A LANDSLIDE AFFECTING YOUR PROPERTY:**



- Drain water from surface runoff, downspouts, and driveways well away from slopes
  - Plant native ground cover on slopes
  - Consult with a professional before significantly altering existing slopes uphill or downslope of your home
  - If you suspect you are on a landslide, contact a licensed engineering geologist or a geotechnical engineer for an evaluation
  - Check online maps, such as SLIDO (Oregon) or the Washington Geologic Information Portal to see if you might live in a landslide area
- 
- Do not add water to steep slopes
  - Avoid placing fill soil on or near steep slopes
  - Avoid placing yard waste or debris on steep slopes
  - Avoid excavating on or at the base of steep slopes



**YOU AND YOUR NEIGHBORS SHARE MORE THAN FENCES. YOU ALL SHARE THE RESPONSIBILITY OF KEEPING YOUR SLOPES SAFE.**

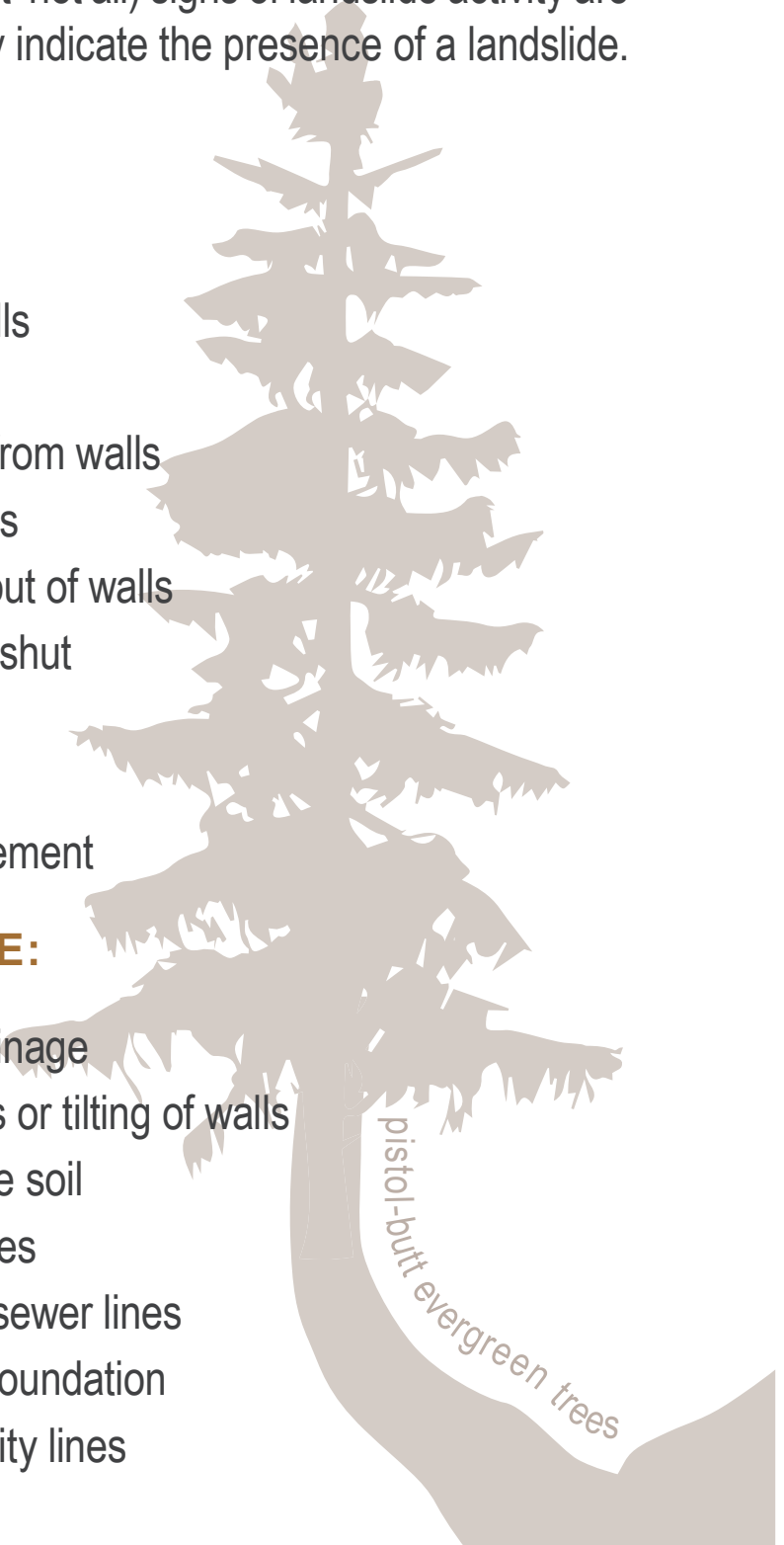
If you live on or near a steep slope, evaluate your property for signs of landslide movement. Many (but not all) signs of landslide activity are listed below. A high score may indicate the presence of a landslide.

### INSIDE YOUR HOME:

- ☐ Cracks in walls
- ☐ Nails popping out of walls
- ☐ Bulging walls
- ☐ Separation of chimney from walls
- ☐ Creaking/popping noises
- ☐ Light switches coming out of walls
- ☐ Doors/windows hard to shut
- ☐ Twisted beams
- ☐ Cracks in floors
- ☐ Water seeping into basement

### OUTSIDE YOUR HOME:

- ☐ Changes in surface drainage
- ☐ Bulges in retaining walls or tilting of walls
- ☐ Cracks developing in the soil
- ☐ Pistol-butted or bent trees
- ☐ Broken water, utility, or sewer lines
- ☐ Cracks in sidewalks or foundation
- ☐ Stretched or leaning utility lines



**CONSULT A PROFESSIONAL BEFORE PURCHASING  
PROPERTY IN SLOPING AREAS**

## For More Information

### IF YOU ARE IMPACTED BY OR

- Evacuate
- Contact your local fire, police, emergency manager, or public works department
- Contact a licensed professional



### LANDSLIDE RESOURCES

#### OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

SLIDO Landslide Information Database  
[www.oregongeology.org/sub/slido](http://www.oregongeology.org/sub/slido)

#### U.S. GEOLOGICAL SURVEY

Landslide Hazards Program  
[landslides.usgs.gov](http://landslides.usgs.gov)

#### WASHINGTON GEOLOGICAL SURVEY

Washington Geologic Information Portal  
[www.dnr.wa.gov/geologyportal](http://www.dnr.wa.gov/geologyportal)

#### WASHINGTON STATE DEPARTMENT OF ECOLOGY

Slope Stabilization and Erosion Control  
Using Vegetation  
[www.ecy.wa.gov/programs/sea/pubs/93-30](http://www.ecy.wa.gov/programs/sea/pubs/93-30)



Oregon Department  
of Geology and  
Mineral Industries



WASHINGTON STATE DEPT OF  
**NATURAL  
RESOURCES**

This pamphlet offers some general guidance a homeowner should consider regarding their home and property. Landslide conditions vary from site to site—if you are concerned about your property, it is always best to consult a professional.